

MAP 4C Mid-Term Exam Review

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1 Introduction

Algebra

$$\begin{aligned}1.a) & (p-4)(p+5) = p^2 + 5p - 4p - 20 = p^2 + p - 20 \\b) & (n+8)(n+2) = n^2 + 2n + 8n + 16 = n^2 + 10n + 16 \\c) & (m+3)(m-7) = m^2 - 7m + 3m - 21 = m^2 - 4m - 21 \\d) & (w-4)(w-6) = w^2 - 6w - 4w + 24 = w^2 - 10w + 24 \\e) & (2x-3)(5x-4) = 10x^2 - 8x - 15x + 12 = 10x^2 - 23x + 12 \\f) & (y-5)(2y+9) = 2y^2 + 9y - 10y - 45 = 2y^2 - y - 45 \\g) & (3a+1)(4a+1) = 12a^2 + 3a + 4a + 1 = 12a^2 + 7a + 1 \\h) & (7-x)(4+x) = 28 + 4x - 7x - x^2 = 28 - 3x - x^2 \\i) & (x-6)(x+6) = x^2 + 6x - 6x - 36 = x^2 - 36 \\j) & (x+2)^2 = x^2 + 2x + 2x + 4 = x^2 + 4x + 4 \\k) & (y+11)(y-11) = y^2 - 11y + 11y - 121 = y^2 - 121 \\l) & (z-5)^2 = z^2 - 5z - 5z + 25 = z^2 - 10z + 25\end{aligned}$$

$$\begin{aligned}2.a) & 4(x-2)(3x-5) = (4x-8)(3x-5) = 12x^2 - 44x + 40 \\b) & 4(x-3)^2 - 5(3x^2 - 5x + 7) = 16x^2 - 24x + 9 - 15x^2 + 25x - 35 = x^2 + x - 26\end{aligned}$$

$$\begin{aligned}3.a) & (2x-5)(x+1) = 2x^2 + 2x - 5x - 5 = 2x^2 - 3x - 5 \\b) & 5x(4x-1) = 20x^2 - 5x \\(8x+3-4x-1)(2x-1) &= (4x+2)(2x-1) = 8x^2 - 2 \\(20^2 - 5x) + (8x^2 - 2) &= 28x^2 - 5x - 2\end{aligned}$$

$$\begin{aligned}4.a) & (18-12x) = 6(3-2X) \\b) & 21w^2 - 28w + 35 = 7(3w^2 - 4w + 5) \\c) & 24x^2 + 16x = 8x(3x+2) \\d) & 15a^3 - 20^2 + 25 = 5a(3a^2 - 4a + 5) \\e) & 20m^2 - 30m = 10m(2m-3) \\f) & 27k^3 - 36k^5 = 9k^3(3-4k^2) \\g) & n^2 - 144 = (n+12)(n-12) \\h) & 81 - x^2 = (9+x)(9-x) \\i) & 5m^2 - 80 = 5(m^2 - 16) = 5(m+4)(m-4) \\j) & 10x^2 - 90 = 10(x^2 - 9) = 10(x+3)(x-3) \\k) & x^2 + 5x + 6 = (x+2)(x+3)\end{aligned}$$

$$\begin{aligned}
\text{l)} & a^2 - a - 30 = (a + 5)(a - 6) \\
\text{m)} & x^2 + 3x - 10 = (x + 2)(x - 5) \\
\text{n)} & m^2 - 9m + 20 = (m - 4)(m - 5) \\
\text{o)} & x^2 + 6x - 27 = (x - 3)(x + 9) \\
\text{p)} & 3x^2 - 6x - 105 = 3(x^2 - 2x - 35) = 3(x + 5)(x - 7) \\
\text{q)} & 5x^2 + 17x + 6 = 5x^2 + 15x + 2x + 6 = (5x + 2)(x + 3) \\
\text{r)} & 5x^2 - 7x - 6 = 5x^2 + 3x - 10x - 6 = (x - 2)(5x + 3) \\
\text{s)} & 3x^2 + 10x + 3 = 3x^2 + 9x + x + 3 = (3X + 1)(X + 3) \\
\text{t)} & 2x^2 + 9x + 4 = (2x + 1)(x + 4)
\end{aligned}$$

$$5.\text{a)} x^2 - 7x + 10 = 0$$

$$(x - 2)(x - 5) = 0$$

$$x = 2, 5$$

$$\text{b)} x^2 - x - 12 = 0$$

$$(x - 4)(x + 3) = 0$$

$$x = 4, -3$$

$$\text{c)} x^2 - 25 = 0$$

$$(x - 5)(x + 5) = 0$$

$$x = 5, -5$$

$$\text{d)} x^2 - 3x = 10$$

$$x^2 - 3x - 10 = 0$$

$$(x + 2)(x - 5) = 0$$

$$x = -2, 5$$

$$\text{e)} x^2 + 10x + 25 = 0$$

$$(x + 5)^2 = 0$$

$$x = -5$$

$$\text{f)} x^2 + 81 = 18x$$

$$x^2 - 18x + 81 = 0$$

$$(x - 9) = 0$$

$$x = 9$$

Budgets

1.b

2.d

3.Fixed cost is that the constant and doesn't change, such as rent, property taxes and insurance. Variable cost is that depends on how much do I use some-things, such as groceries, utilities and amusement.

4.a)option1-\$4200

option2-\$5640

b)He will pay utilities.

c)I recommend option 2 to Raj, because I prefer individual room than shared room. Option 2 is more expensive than option 1, but he will find worth paying rent.

5.

Income		Expenses	
Paycheck	\$1000	Rent	\$820
Allowance from parents	\$1000	Food	\$325
		Health/Medical	\$50
		Transportation	\$45
		Utilities	\$300
		clothing	\$200
		Tax	\$75
		Entertainment	\$100
income	\$2000	Expenses	\$1915

6.

7.

8.a)\$18032.52

b)\$35.94

c)\$9180

d)\$855.2

e)\$275.8

9.Rent-\$11400

Insurance-\$840

Cable/Internet-\$1140

Electricity-\$540

Furniture-\$1500

Trigonometry Measurement

1.a) $\sin 20^\circ = c/2$

$c = 0.684m$

b)= $4.4/1.6$

$N = 70^\circ$

2.a) $B = 75^\circ$

$\sin 15^\circ = a/8$

$a = 2.1cm$

$\cos 15^\circ = b/8$

$b = 7.7cm$

b)= $9.2/14$

$= 0.6571$

$C = 41^\circ$

$\cos 41^\circ = d/14$

$d = 10.6yards$

$C = 41^\circ$

$D = 49^\circ$

c) $X = 23^\circ$

$\sin 67^\circ = 21/z$

$z = 22.8m$

$\cos 67^\circ = x/22.8$

$x = 8.9m$

$$\begin{aligned}
& \text{d) } Q = 34^\circ \\
& \tan 51^\circ = r/150 \\
& r = 185.2 \text{ mm} \\
& \cos 51^\circ = 150/p \\
& p = 121.5 \text{ mm} \\
& \text{e) } = 1.2/1.5 \\
& = 0.8 \\
& H = 39^\circ \\
& G = 51^\circ \\
& \cos 39^\circ = 1.5/i \\
& i = 1.9 \text{ m} \\
& \text{3.a) } 26.7^\circ \\
& \text{b) } 102.1^\circ \\
& \text{c) } 23.3^\circ \\
& \text{d) } 36.9^\circ \\
& \text{e) } 171.9^\circ \\
& \text{f) } 40^\circ \\
& \text{4.a) } R = 135^\circ \\
& \sin 22^\circ / 5.3 = \sin 23^\circ / p \\
& p = 5.3 \sin 23^\circ / \sin 22^\circ \\
& p = 5.5 \text{ km} \\
& r^2 = 5.5^2 + 5.3^2 - 2(5.5)(5.3)(\cos 135) \\
& r^2 = 58.34 - (-41.22) \\
& r^2 = 99.56 \\
& r = 10 \text{ km} \\
& \text{b) } t^2 = 3^2 + 1.1^2 - 2(3)(1.1)(\cos 32) \\
& t^2 = 10.21 - 5.6 \\
& t^2 = 4.61 \\
& t = 2 \text{ ft. } 1 \text{ in.} \\
& 2.1 / \sin 32 = / \\
& = 3 \sin 32 / 2.1 \\
& = 0.7570 \\
& V = 49.2^\circ \\
& U = 98.8^\circ \\
& 5.Y = 51^\circ \\
& \sin 51 / 9.9 = \sin 83 / x \\
& x = 9.9 \sin 83 / \sin 51 \\
& x = 12.6 \text{ ft.} \\
& z^2 = 14^2 + 12.6^2 - 2(14)(12.6)(\cos 52) \\
& z^2 = 354.76 - 217.21 \\
& z^2 = 137.55 \\
& z = 11.73 \text{ ft.} \\
& \text{7.b) } 4 \times 4 \times 0.5 - 0.7^2 \times 0.5 \times \pi \\
& = 8 - 0.77 \\
& = 7.23 \text{ cm}^3 \\
& 4 \times 4 \times 2 + 0.5 \times 4 \times 4 - 0.7^2 \times \pi
\end{aligned}$$

$$\begin{aligned} &= 32 + 8 - 1.54 \\ &= 38.46 \text{ cm}^2 \\ 8.a) \end{aligned}$$